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U.S. ENVIRONMENTAL PROTECTION AGENCY

RCRA COMPLIANCE EVALUATION INSPECTION REPORT

MAPCO ALASKA PETROLEUM, INC.

U. S. ENVIRONMENTAL PROTECTION AGENCY
RCRA COMPLIANCE EVALUATION INSPECTION REPORT

Facility Name: MAPCO Alaska Petroleum, Inc.

EPA Identification Number: AKD 00085 0701

Facility Location: 1100 H & H Lane
North Pole, Alaska 99705-7899

Facility Mailing Address: Same as facility location

Facility Telephone Number: 907/448-2741

Facility Representatives: David Rowse
General Manager
907/488-2741

Kathleen McCullom
Environmental Supervisor
907/488-0033

John Hellen
Environmental Engineer
907/448-2741

Date of Inspection: June 30, 1997

Date of Report: July 14, 1997

Inspector's Name: Anna I. Filutowski
RCRA Compliance Officer
U.S. Environmental Protection Agency
Region 10
Office of Waste and Chemicals Management
RCRA Compliance Unit
1200 Sixth Avenue, WCM-126
Seattle, WA 98101
206/553-5122

Purpose

This inspection was conducted to gather information on the facility's compliance with applicable regulations for management of hazardous waste and the United States hazardous waste laws.

Facility Description

MAPCO Alaska Petroleum, Inc. operates a petroleum refinery at North Pole, Alaska. The North Pole Refinery (NPR) is located in the North Star Borough about 20 miles southeast of Fairbanks. The facility is located on approximately 240 acres of land leased from the State of Alaska. **Appendix A** presents the facility location map. Active portion of the facility encompasses approximately 4 acres. **Appendix B** presents the diagram of the facility.

The NPR began operation in 1977 as North Pole Refinery, a division of Earth Resources Company of Alaska. Refinery feedstock is North Slope crude from the Prudhoe Bay oil fields, which is obtained from the Trans Alaska Pipeline System (TAPS). Under normal operating conditions, the facility operates 24 hours a day, 365 days a year. Residual portions of the feedstock not utilized in the facility process are returned to TAPS. The NPR's initial intake was 30,000 barrels of crude oil per day. Presently, after several modifications, NPR is capable of processing 130,000 barrels per day of crude oil and producing over 40,000 barrels per day of petroleum products. In addition, the refinery has an aggregate storage capacity of 500,000 barrels of petroleum products. Nearly all of the piping located at the facility is above ground, interconnecting the process area, the tank farm, and the track and rail loading facilities. The facility produces home heating oil, diesel and jet fuels, gasoline and asphalt.

Products are delivered by means of rail, truck, and pipelines. Products are transferred by stationary pumps associated with truck and rail activities. Transportation by rail is the primary mode for distributing products to Anchorage based markets, whereas tanker trucks distribute to the local market, and a pipeline supplies the military base.

The facility has two crude distillation units, Crude Unit #1 & #2. Each of these units is shut down annually for general maintenance and cleaning. The NPR is planning to build a third crude distillation unit to meet growing demands for petroleum products in Alaska. The new Crude Unit #3 will need appropriate air permits from the Alaska Department of Environmental

Conservation (ADEC) and possible notification to the United States Environmental Protection Agency (EPA).

Compliance History

On March 5, 1987, MAPCO was the subject of a non-notifier RCRA Compliance Evaluation Inspection (CEI). Several hazardous waste management violations were observed during this inspection including illegal disposal of seven drums of Navy Brand Solvent. This solvent contained more than 11.2% 1,1,1, trichloroethane and 35.8% methylene chloride and was reportedly disposed of in the facility's sump system sometime between April 1986 and March 1987. As a result of the March 1987 inspection, EPA issued to the facility a 3008(a) Complaint and Compliance Order on January 27, 1988. A Consent Agreement and Final 3008(a) Order was signed by the facility on December 29, 1988 and by EPA on January 6, 1989. The 3008(a) Order carried a $80,000 penalty.

The facility also signed an Administrative Order on Consent (AOC) under Section 3008(h) of RCRA on December 29, 1988. This Order was signed by EPA on January 6, 1989. The 3008(h) Order identified Tank 192, Lagoon B, the Boneyard, and Sumps 901, 905, 909b and 05-7 as units that received regulated hazardous waste, and required MAPCO to conduct an Interim Corrective Measure (ICM) program to remove hazardous waste constituents from these units. As required by the 3008(h) Order, MAPCO also completed several tasks including: 1) Description of Current Conditions report; 2)Pre-Investigation Evaluation of Corrective Measure Technologies Study; 3) Interim Measures Work plan; 4) RCRA Facility Investigation (RFI) Work plan; and 5) RFI Report. The Order stipulated that MAPCO conduct a Corrective Measures Study (CMS)dependent upon, and in accordance with, results of the RFI. EPA never approved the RFI in writing and a CMS has never been conducted.

According to the last inspection report conducted by the ADEC staff, MAPCO has fulfilled its obligations under the 3008(a) Order. MAPCO implemented the Closure Plans for Tank 192, Lagoon B, the Boneyard, and Sumps 901, 905, 909b and 05-7 in 1990. Closure Certification for these units was submitted to EPA in October of 1991. EPA approved the Closure Plans in a June 30, 1994 letter to MAPCO. It was not clear at the time of the inspection, if the 3008(a) Order had been terminated by the approval letter of June 30, 1994.

In addition to the above mentioned EPA Orders, the facility is also operating under a 1986 ADEC Compliance Order that addresses the cleanup of floating product and dissolved

hydrocarbons in the groundwater. That contamination primarily resulted from product spills and leaking sumps and tanks since 1977. MAPCO installed several recovery wells and as of today, has recovered more than 300,000 gallons of petroleum product. Recovered product is refined and the remaining water fraction, with benzene concentrations of 300-400 ppb, is treated in air stripping towers prior to discharge to gravel pits and a leach field system. The wastewater discharge is covered under an ADEC's Wastewater Disposal Permit, and per permit conditions, benzene levels in the treated wastewater must not exceed 5 ppb.

Since the 1987 CEI, MAPCO has been subject to a RCRA Facility Assessment in July 1988; a Corrective Action Oversight inspection in July 1989 and June 1990; a Comprehensive Groundwater Monitoring Evaluation by PRC, EPA's contractor, in May 1990; and CEI(s) in 1989, 1990, 1991, 1992, 1993, and 1994. The last State CEI inspection of 1994 did not result in any NOV(s).

Introduction

I arrived at the facility at 8:30 am and I met with Ms. Kathleen McCullom, Mr. John Hellen, and Mr. David Rowse. I showed my investigator's credentials and explained the purpose of the inspection. I also discussed with the facility representatives the compliance history of the facility with the emphasis on the status of their RCRA corrective action pursuant to the AOC of 1989. In addition, I discussed the current status of the 3008(a) Order. The section titled **Compliance History** of this inspection report summarizes the regulatory history that prompted EPA to issue the 3008(a) and 3008(h) Orders.

After the initial discussion, Mr. Rowse left. Ms. McCullom and Mr. Hellen participated in the inspection. Ms. McCullom is MAPCO's environmental supervisor supervising three employees, (**Appendix C**). One of Mr. Hellen's areas of responsibility is hazardous waste management, which includes tracking of waste at points of generation, issuance of hazardous waste labels, coordinating waste shipments off-site, waste profiles and manifests review, and preparation of annual waste reports. During the interview, I asked MAPCO's representatives to identify the Facility's processes, waste streams, and points of waste generation. Ms. McCullom stated that MAPCO is a Small Quantity Generator (SQG), however, occasionally the facility becomes a Large Quantity Generator (LQG). Ms. McCullom pointed out that in June and July of this year (1997), MAPCO is a LQG because of the crude units general maintenance and cleaning. Regulated hazardous waste is generated during this activity and includes

desalter sludge (D001 & D018), heat exchanger bundle cleaning sludge (K050), and petroleum refinery primary oil/water/solids separation sludge (F037). Ms. McCullom continued that the solids removed from trenches throughout the refinery are designated as F037. These trenches receive capture precipitation and some process wastewater. The trenches lead to the sump which in turn leads to Tank 192, an oil/water separator. Recovered fuel from Tank 192 is refined while the associated water is passed through an air stripper and subsequently discharged to a series of treatment lagoons, Lagoons A, B, and C. Sump 912A receives treated wastewater from Lagoon C and that is then discharged to the City of North Pole's Publicly Owned Treatment Works (POTW).

Ms. McCullom stated that to alleviate some of MAPCO's past hazardous waste management problems, the facility does not use chlorinated compounds anymore. This ban on the use of chlorinated compounds extends to the contractors doing work on-site.

Before the field portion of the inspection, I asked Ms. McCullom for copies of the following documents: current facility map, current facility organizational chart, and current description of MAPCO's activities. In addition, I asked for the documentation related to the RCRA corrective action. All above mentioned documents were provided to me before the end of the inspection and pertinent documents are included in this Report as Appendices.

Field Tour

Control Room

At 11:10 am I started the field portion of the inspection. The first stop was the Control Room. This room is equipped with electronic controls for most of the ongoing processes in the refinery. No hazardous waste is generated in the Control Room.

Fire Hall

Next we walked to the Fire Hall. MAPCO has its own fire brigade that consists of the volunteers who are also employees of the refinery. A centralized MSDS tracking system is located in the Fire Hall, as well as a centralized tracking system for all the training needs. The MSDS tracking system was down during the inspection. According to Ms. McCullom this system will allow MAPCO to streamline the work required to compile Tier II and Tier III reports that are mandated under Emergency Planning and

Community Right to Know Act (EPCRA). In addition, all employees with PC terminals will be able to use the MSDS system facility-wide.

Employees training tracking is performed by commercial software called TRIM. This software has the capability to sort the data base by various configurations; for example, provide a list of all employees that require HazMat Communication training, or a list of employees whose mandatory training is about to expire. In addition to the tracking system, MAPCO maintains a hard copy file by training category with the signed rosters.

Laboratory

Next, we stopped by a satellite accumulation area for the laboratory. The primary function of the laboratory is to provide Quality Assurance and Quality Control QA/QC for the various petroleum products. There were two drums containing mercury waste from broken thermometers **(Photo No. 1)**. The drums were labeled as required by 40 CFR 262.34(a)(3) and (4) **(Photo No. 2)**. I asked Ms. McCullom if the laboratory procedures require the use of mercury thermometers and if MAPCO can substitute mercury thermometers with the commonly used alcohol thermometers. Ms. McCullom said she is interested in eliminating the waste stream containing mercury and that she will research this option.

Next to the satellite area there was one flammable cabinet containing several QA/QC petroleum product samples **(Photo No. 3)**. These samples are retained for a specified time period and then placed into the sump adjacent to the lab **(Photo No. 4)**. The sump leads to Tank 192 where petroleum products are collected before they are transferred back to the plant for processing.

Air Stripper for the Groundwater Remediation

The air stripper had been installed as part of the ADEC Compliance Order of 1986 to recover a floating product and dissolved hydrocarbons in the groundwater **(Photo No. 5)**. Groundwater stripped of volatile organic compounds is discharged into the small holding pond **(Photo No. 6)**. From the holding pond the water is pumped to a gravel pit **(Photo No. 7)**. Presently, benzene concentration in the water discharged from the air stripper is less then 5 ppb **(Appendix D)**.

Spill Room

MAPCO uses the spill room for storage of various spill cleanup equipment and materials. They also have there a florescent bulb crusher **(Photo No. 8)**. Next to the spill room,

MAPCO has an emergency response vehicle **(Photo No. 9).**

Sumps and Crude Oil Processing Area

Next we went to inspect sumps that had been identified in the past as one of the primary sources of contamination. **Photos No.(s) 10 and 11** depict sump 05-7, and sump 901 respectively.

En route to the Effluent Building we passed Crude Unit #1 **(Photo No. 12).**

Effluent Building

The effluent building is located next to Tank 192. Sump 905 is located inside of the building. Used oil is collected in sump 905, then it is transferred to the used oil tank and subsequently is reused by the facility.

Record Review

Around 12:15 pm we went back to Ms. McCullom's office to conduct a file review. I asked to see a random sample of records generated since the last inspection of 1994. MAPCO files their records concerning hazardous waste management by shipments. I reviewed files for one shipment in 1995, one shipment in 1996, and the file for the only shipment in 1997. I also reviewed the annual hazardous waste report for 1996. During my file review I did not notice any discrepancies related to the profile sheets, manifests, and LDR forms.

After the document review, Mr. Hellen had to leave the facility for personal reasons. Ms. McCullom accompanied me for the rest of the inspection.

Wastewater Treatment Lagoons

We continued the field portion of the inspection. We observed Lagoons A, B, and C which are part of the facility's waste water treatment system. Liner of lagoon A was torn and was undergoing repair **(Photo No. 13).** Active bioremediation of waste water takes place in Lagoon B **(Photo No. 14).** The waste water includes process waste water, storm water, and groundwater.

90-day Storage Area

Next we went to the less then 90 days hazardous waste storage area. Because of the Facility's remote location, MAPCO is

subject to the exception under 40 CFR part 262.34(e). The storage area was bermed, fenced and locked. **Photo No. 15** depicts the location of drums placed in the storage area. There was one unlabeled 20 gallon drum on the pellet with drums containing K050 waste (**Photo No.16**). Ms. McCullom immediately contacted the employee responsible for placing this drum in the hazardous waste storage area. The drum was opened and it was determined that the drum contained oil contaminated rags. An appropriate label was affixed to the drum. I did not see any evidence of the weekly inspection conducted in this area. I mentioned this to Ms. McCullom. Ms. McCullom responded that she knows MAPCO's processes very well, and because the facility does not generate large quantities of hazardous waste, she felt it was an unnecessary burden placed on the facility to keep a written log of the weekly inspections. Ms. McCullom continued that the inspections are conducted in the form of personal observation, but there is no written documentation of them. I told Ms. McCullom that the purpose of the weekly inspection among other things is to quickly correct situations such as the unlabeled drum immediately upon discovery. Written inspection log is not required by regulation for generators.

Boneyard

Next, we walked to the boneyard where various types of debris were scattered around **(Photo No. 17)**. According to Ms. McCullom all debris is a non-hazardous waste.

Monitoring and Recovery Wells

En route to observing some of the monitoring/recovery wells that had been installed in an effort to remediate groundwater, we crossed rail tracks by a rail loading facility. As depicted in **Photo No. 18**, soils were stained along the tracks.

Next, I inspected several groundwater recovery wells, both active and inactive. MAPCO is working closely with their consultant to identify the most effective pumping rate. This is accomplished by frequent water level measurements and pumping rates adjustments. Successful product recovery greatly depends on reliability of the pump and treat system. To operate the groundwater treatment system is challenging due to the extreme weather conditions, yet, MAPCO is capable of recovering product continuously even in the coldest temperatures. **Photo No. 19** shows the control panel for the recovery well R-9, **Photo No. 20** shows the baseboard heating system which allows for successful product recovery. **Photo No. 21** captures one of the observation wells with the chunk of ice floating on top of the water. Ambient air temperature on June 30, 1997 was in the 90's° F.

Out Brief

Ms McCullom and Mr. Rowse represented MAPCO during the out brief. I summarized the inspection findings and discussed potential areas of concern; one being lack of evidence of the weekly 90-day hazardous waste storage area inspection, and second being the placement of the unlabeled drum in the hazardous waste storage area.

We also discussed options to bring RCRA corrective action to the closure. MAPCO was very clear in stating their preference, which is to conduct the cleanup under the Alaska Department of Environmental Conservation (ADEC). MAPCO believes that their contamination of groundwater and soil is the result of product spills, and not improper management of hazardous wastes. As such, MAPCO questioned the appropriateness of the EPA AOC(s). Ms. McCullom has offered to come to Seattle to give a presentation on the work that has been done so far as part of RCRA corrective action and to discuss the possibility of terminating the 3008(h) with EPA. I agreed with this proposal explaining that MAPCO should consider options in which EPA remains the lead agency for the cleanup. Ms. McCullom stated that she understands there may not be any changes in respective roles of the regulating agencies. Everybody agreed that the cleanup should continue regardless which agency provides the oversight.

Conclusions and Recommendations

At the time of inspection, the facility appeared to be in compliance with the requirements of 40 CFR 262 for small and large quantity hazardous waste generators. All records requested at the time of the inspections have been submitted to EPA and are included collectively in **Appendix E.** They are:

- February 13, 1997 Green Star Award Application Package
- March 1989 Waste Analysis Plan
- January 31, 1989 Procedures and Methods to Assure Compliance with 40 CFR Part 262 Regulations
- February 15, 1996 Philip Environmental Waste Summary Report
- 1995 Biennial Hazardous Waste Report
- File for MAPI Hazardous Waste Manifest NPR-26
- File for MAPI Hazardous Waste Manifest NPR-28

I recommend that EPA and MAPCO move forward to resolve the outstanding issues regarding 3008(a) and 3008(h) compliance orders.

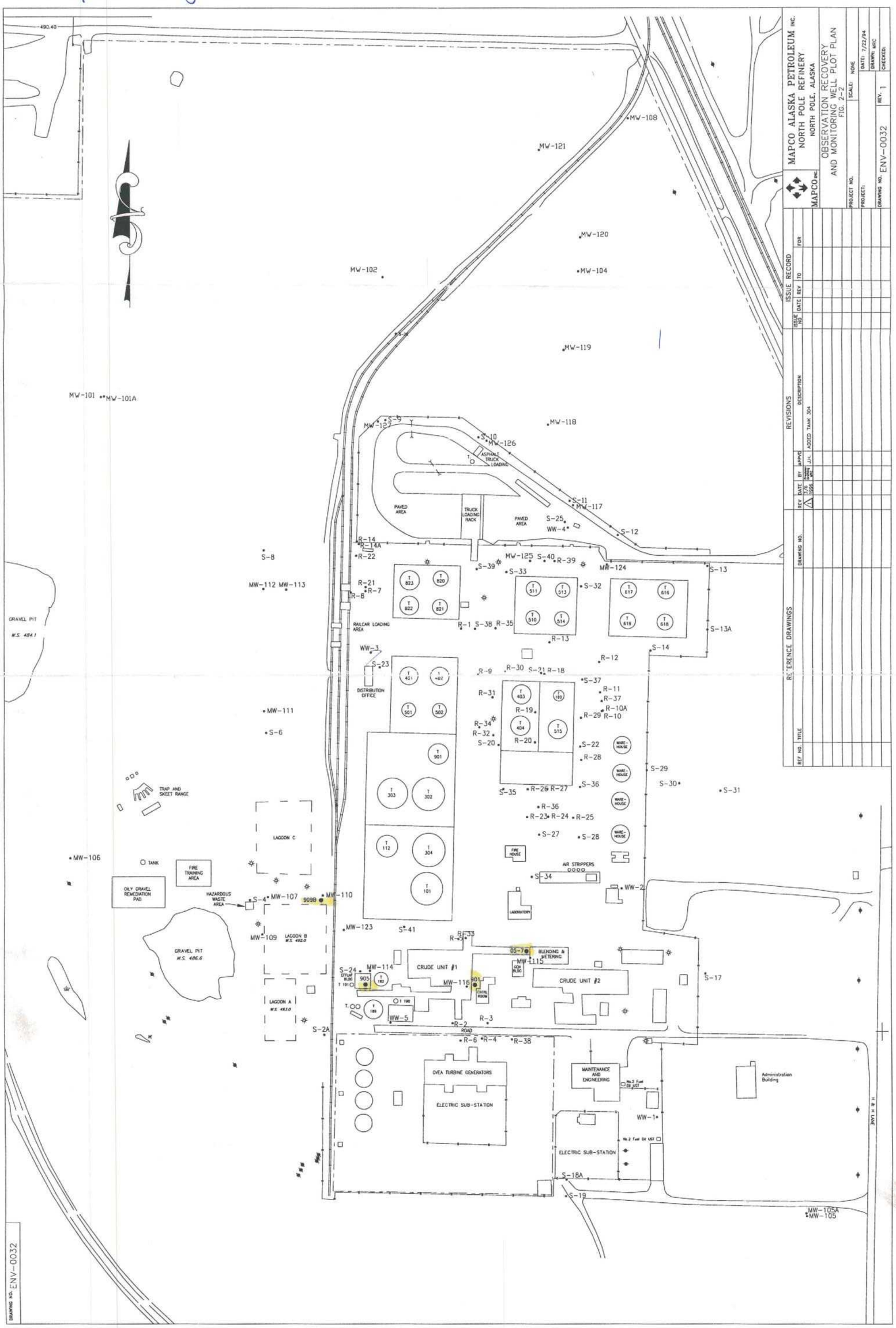
APPENDIX A

FACILITY MAP

MAPCO

Appendix 1

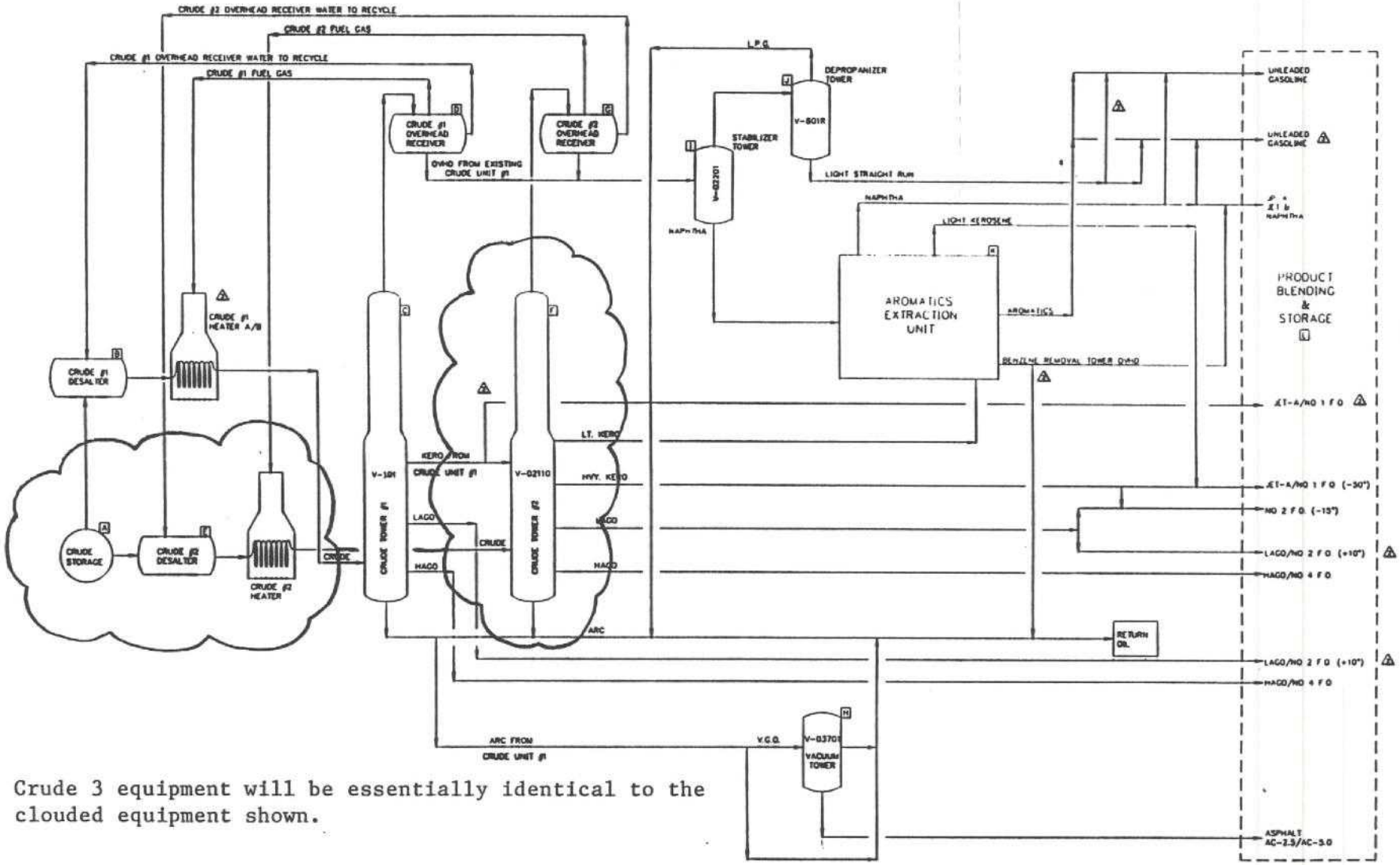
RCRA inspection, June 30, 1997



APPENDIX B

FACILITY PROCESS

D-00-1019



NOTE: Crude 3 equipment will be essentially identical to the clouded equipment shown.

REFERENCE DRAWINGS			REVISIONS					ISSUE RECORD				

MAPCO ALASKA PETROLEUM INC.
NORTH POLE REFINERY
NORTH POLE, ALASKA

FACILITY PROCESS FLOW DIAGRAM

PROJECT NO | SCALE: NONE
PROJECT | DATE: 6/30/87
DRAWING NO. D-00-F1019 | REV 3 | CHECKED

MAPCO RCRA Inspection, June 30, 1987

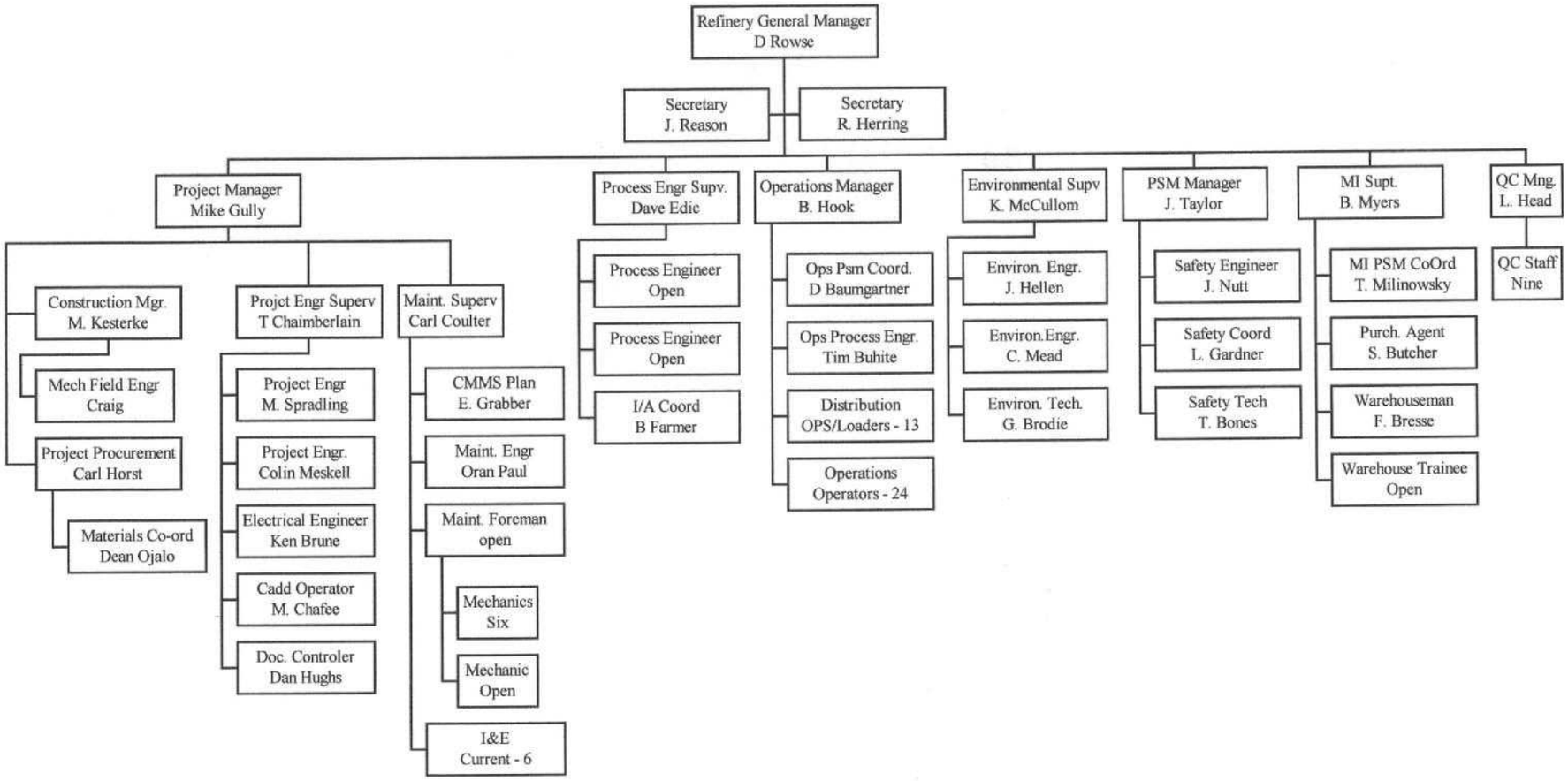
Appendix 2

APPENDIX C

MAPCO ORGANIZATIONAL CHART

Attachment 3

Mapco Alaska Petroleum Inc. 1997 Refinery Organization



APPENDIX D

JULY 1997 GROUNDWATER REMEDIATION STATUS REPORT

RCRA inspection, June 30, 1997

CO-003
MAPCO ALASKA PETROLEUM INC.
1100 H&H LANE
NORTH POLE, ALASKA 99705
(907) 488-2741

NRO File NPDES - DMR

January 11, 1996

Ms. Vanessa Blevins
State of Alaska
Department of Environmental Conservation
610 University Ave
Fairbanks, AK 99709-3643

RE: MAPCO ALASKA PETROLEUM Inc. North Pole Refinery Groundwater Remediation Status Report

Dear Ms. Blevins,

This is a summary of remediation activities at MAPI's North Pole during 1995.

Product Recovery

During the month of December, 330 gallons of product were recovered. During all of 1995, 6,342 gallons of free product were recovered, 4,518 of which was from the enhanced recovery double pump systems. Attached is a monthly summary of product recovered from each recovery well.

Groundwater

The groundwater elevation is measured weekly at 4 observation wells. Attached is a graph which summarizes groundwater fluctuations for 1995. The high water level for the year was reached during the week of July 21 and the low was reached on November 3.

Wastewater from the groundwater remediation system was discharged to the south gravel pit 31 days during the month of December. The daily flow was between 0.13 million gallons per day (MGD) and 0.19 MGD, average flow was 0.16 MGD.

We sampled the influent and effluent of the groundwater remediation air strippers on December 7, 1995. These results and the results from November are attached.

We sampled monitoring wells MW-106, MW-128, MW-117, and MW-126 on December 7, 1995. We were unable to sample MW-127 which had been scheduled for

December because of a bad pump diaphragm. We plan to sample it during the January sampling. The results of the wells sampled are attached as well as the results from November.

The monitoring wells at the down gradient edge of the refinery were sampled either quarterly or semiannually during 1995. A diagram summarizing the benzene results is attached.

Attached is the planned 1996 air stripper and monitoring well sampling schedule. The air stripper influents and effluents and the two monitoring wells down gradient of the gravel pits will be sampled monthly. The three monitoring wells located down gradient at the refinery's fence line will be sampled quarterly, and the remaining monitoring wells will be sampled semiannually.

If you have any questions or comments please call 488-0033.

Sincerely,

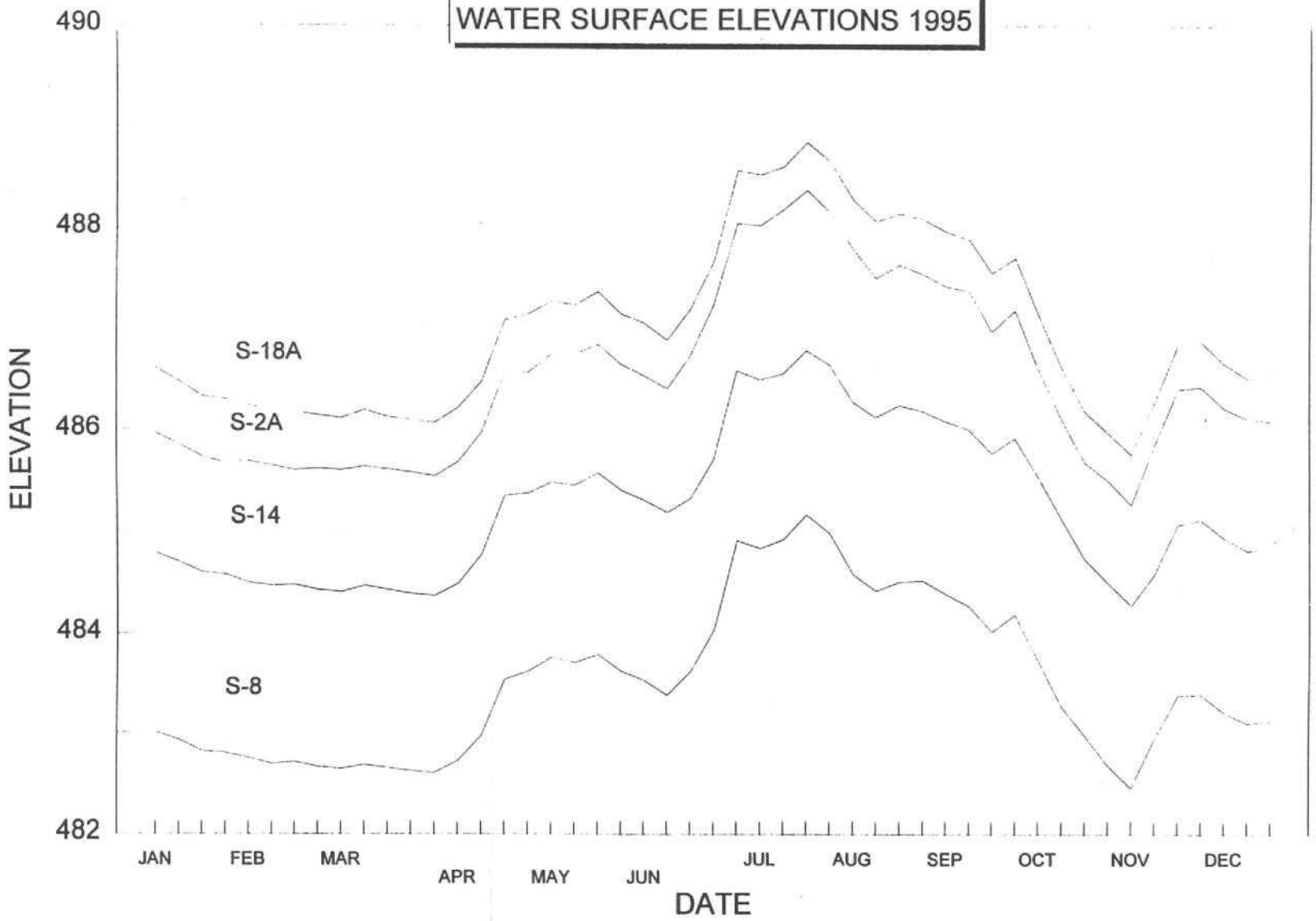
Kathleen McCullom
Environmental Supervisor

cc: D.C. Rowse (MAPI)
Eleanor Hung (ADEC) NRO File 100.38.090

1995 Oil Recovery

Recovery Well	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Year Total	To Date Total
R-1													0	5086
R-2													0	3299
R-3													0	419
R-4													0	1140
R-5	96	42	63	8				31		33	41	7	321	12767
R-6													0	80
R-7						32	136	23	10				201	18103
R-8					15	19			15				49	20231
R-9	19	10	34								8		71	37285
R-10													0	4414
R-11													0	4394
R-11	73	35									9		117	32754
R-12													0	4230
R-13													0	5022
R-14				22	34	45			22				123	6812
R-18	24	6											30	7304
R-19						9							9	8803
R-20	11		1	8	22	27							69	40227
R-21	83	320	306	139	87	185	37	108	37	16	89	34	1441	66676
R-22		4			11	30				15		4	64	1566
R-23	18			15									33	666
R-24					5								5	1672
R-25				62									62	1156
R-26				5					8				13	601
R-27	3				6	5			5			2	26	1660
R-28				7									7	232
R-29													0	67
R-30	7				8			6					21	57
R-31			5	5							10		20	7455
R-32	5	177	120	105	27	24	10	5	5	30	39	8	555	19397
R-33												0	0	1365
R-34	490	446	426	225	234	129	135	253	86	198	180	275	3077	25458
R-35													0	4994
R-36													0	986
R-37													0	1532
R-38													0	0
R-39													0	521
R-40													0	296
S-33								10	8	10			28	32
S-43													0	155
S-44													0	28
S-45													0	0
Month Total	834	1040	955	601	449	505	318	436	196	302	376	330	6342	350376

OBSERVATION WELLS
WATER SURFACE ELEVATIONS 1995



MAPCO ALASKA PETROLEUM, Inc.
GROUNDWATER REMEDIATION AIR STRIPPER
INFLUENT AND EFFLUENT BTEX CONCENTRATIONS

Date Sampled: 29-Nov-95
Ambient Air Temperature (°C): -25
Recovery Wells: R-21, 34, 39, 40
Inlet Groundwater Flow (gpm): 182
Laboratory: CAS

Parameters	Stripper A		Stripper B		Combined
	Influent	Effluent	Influent	Effluent	Effluent
pH	7.4	7.0	7.5	7.5	7.0
Conductivity (µS/cm at 25°C)	540	531	572	544	545
Temperature (°C)	5.1	5.0	5.2	6.0	4.0
Benzene (µg/L)	340	N.D.(0.5)	340	N.D.(0.5)	1.3
Toluene (µg/L)	242	N.D.(1.0)	210	N.D.(1.0)	N.D.(1.0)
Ethylbenzene (µg/L)	48	N.D.(1.0)	62	N.D.(1.0)	N.D.(1.0)
Xylene (µg/L)	174	N.D.(1.0)	246	N.D.(1.0)	N.D.(1.0)

MAPCO ALASKA PETROLEUM, Inc.
GROUNDWATER REMEDIATION AIR STRIPPER
INFLUENT AND EFFLUENT BTEX CONCENTRATIONS

Date Sampled: 07-Dec-95
Ambient Air Temperature (°C): -25
Recovery Wells: R-21, 34, 39, 40
Inlet Groundwater Flow (gpm): 154
Laboratory: CAS

	Stripper A		Stripper B		Combined
Parameters	Influent	Effluent	Influent	Effluent	Effluent
pH	7.7	8.2	8.2	8.1	8.2
Conductivity (µS/cm at 25°C)	577	542	586	557	572
Temperature (°C)	3.5	5.7	4.9	5.4	2.8
Benzene (µg/L)	370	N.D.(0.5)	340	N.D.(0.5)	N.D.(0.5)
Toluene (µg/L)	190	N.D.(1.0)	150	N.D.(1.0)	N.D.(1.0)
Ethylbenzene (µg/L)	49	N.D.(1.0)	47	N.D.(1.0)	N.D.(1.0)
Xylene (µg/L)	180	N.D.(1.0)	183	N.D.(1.0)	N.D.(1.0)

Monitoring Well
BTEX Concentrations (ug/L) (a),(b)

Monitoring Well	Date Sampled	Lab (c)	Benzene	Toluene	Ethylbenzene	Xylenes
MW-106	31-Jan-92	ANA	2.6	1.6	ND(0.50)	ND(1)
	25-Feb-92	ANA	ND(0.50)	ND(0.50)	ND(0.50)	ND(1)
(Screen	18-Mar-92	ANA	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.0)
18'- 23')	14-Apr-92	ANA	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.0)
	05-May-92	ANA	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.0)
	16-Jun-92	ANA	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.0)
	16-Jul-92	ANA	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.0)
	31-Aug-92	ANA	ND(0.50)	2	ND(0.50)	3
	21-Sep-92	ANA	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.0)
	26-Oct-92	ANA	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.0)
	09-Nov-92	ANA	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.0)
	09-Dec-92	ANA	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.0)
	27-Jan-93	ANA	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.0)
	12-Feb-93	ANA	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.0)
	02-Mar-93	GTEL	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.0)
	02-Mar-93 *DUP*	GTEL	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.0)
	04/20/93	GTEL	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.5)
	05/24/93	GTEL	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.0)
	22-Jun-93	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	27-Jul-93	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	20-Aug-93	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	09-Sep-93	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	15-Oct-93	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	08-Nov-93	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	20-Dec-93	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	17-Jan-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	04-Feb-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	24-Mar-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	24-Mar-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	28-Apr-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	25-May-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	28-Jun-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	29-Jul-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	24-Aug-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	19-Sep-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	06-Oct-94	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	04-Nov-94	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	13-Dec-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	04-Jan-95	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	06-Feb-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	20-Mar-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	20-Apr-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	24-May-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	28-Jun-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	24-Jul-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	16-Aug-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	14-Sep-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	24-Oct-95	CAS	ND(0.5)	ND(1.0)	ND(1.0)	ND(1.0)
	28-Nov-95	CAS	ND(0.5)	ND(1.0)	ND(1.0)	ND(1.0)
	07-Dec-95	CAS	ND(0.5)	ND(1.0)	ND(1.0)	ND(1.0)

Monitoring Well
BTEX Concentrations (ug/L) (a),(b)

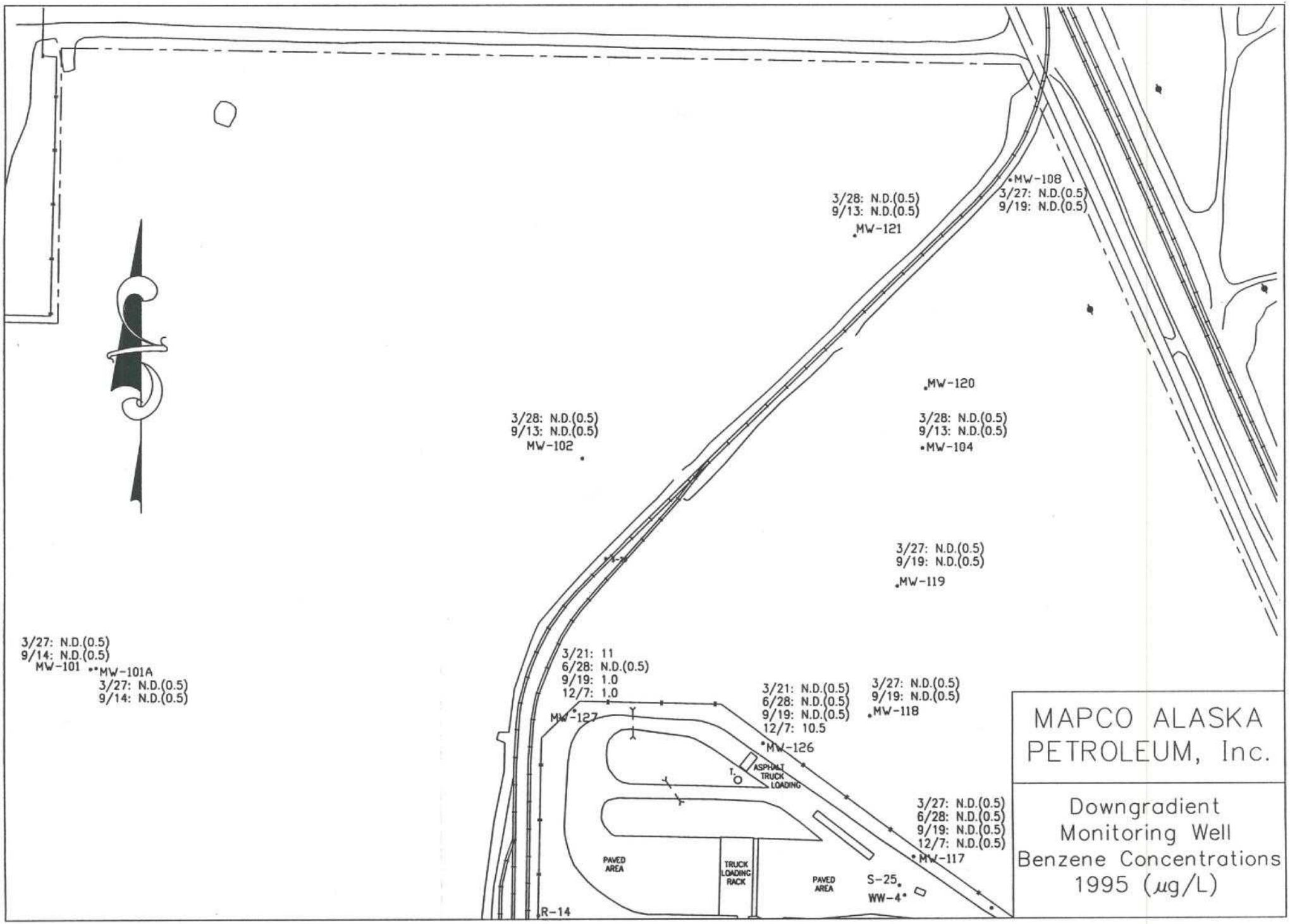
Monitoring Well	Date Sampled	Lab (c)	Benzene	Toluene	Ethylbenzene	Xylenes
MW-117	15-Mar-90	RMA	3000	ND(100)	ND(100)	ND(200)
(Screen	27-Mar-90	RMA	3000	ND(100)	100	ND(200)
38'- 42')	19-Apr-90	RMA	3100	ND(120)	ND(120)	ND(250)
	24-May-90	RMA	2900	ND(50)	130	ND(100)
	26-Jun-90	RMA	3100	ND(120)	ND(120)	ND(250)
	28-Aug-90	RMA	3200	ND(100)	110	ND(200)
	26-Nov-90	RMA	170	ND(5.0)	6.5	ND(5.0)
	27-Mar-91	RMA	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
	27-Mar-91 *DUP*	RMA	ND(0.50)	ND(0.50)	0.94	ND(0.50)
	27-Mar-91 *DUP*	C&G	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
	27-Mar-91 *DUP*	ANA	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
	30-Apr-91	ANA	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
	31-May-91	ANA	ND(1)	ND(1)	ND(1)	ND(1)
	17-Sep-91	ANA	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
	11-Dec-91	ANA	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.5)
	17-Mar-92	ANA	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.0)
	16-Jun-92	ANA	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.0)
	23-Sep-92	ANA	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.0)
	09-Dec-92	ANA	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.0)
	02-Mar-93	GTEL	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.0)
	08-Sep-93	GTEL	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.50)
	21-Dec-93	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	25-Mar-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	28-Jun-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	20-Sep-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	13-Dec-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	21-Mar-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	28-Jun-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	19-Sep-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	07-Dec-95	CAS	ND(0.5)	ND(1.0)	ND(1.0)	ND(1.0)

Monitoring Well
BTEX Concentrations (ug/L) (a),(b)

Monitoring Well	Date Sampled	Lab (c)	Benzene	Toluene	Ethylbenzene	Xylenes
MW-126	30-Aug-91	ANA	1200	ND(0.5)	ND(0.5)	ND(0.5)
(Screen	17-Sep-91	ANA	180	ND(5)	ND(5)	ND(5)
20'-25')	11-Dec-91	ANA	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.5)
	17-Mar-92	ANA	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)
	05-May-92	ANA	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)
	16-Jun-92	ANA	140	ND(0.5)	ND(0.5)	ND(1.0)
	23-Sep-92	ANA	76	ND(0.5)	ND(0.5)	ND(1.0)
	03-Mar-93	GTEL	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)
	03-Mar-93 *DUP*	GTEL	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)
	22-Jun-93	GTEL	4	ND(0.3)	ND(0.3)	ND(0.5)
	09-Sep-93	GTEL	0.5	ND(0.3)	ND(0.3)	ND(0.5)
	21-Dec-93	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	25-Mar-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	28-Jun-94	GTEL	0.9	ND(0.3)	ND(0.3)	ND(0.5)
	20-Sep-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	13-Dec-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	21-Mar-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	21-Mar-95 *DUP*	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	28-Jun-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	19-Sep-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	07-Dec-95	CAS	10.5	ND(1.0)	ND(1.0)	ND(1.0)

Monitoring Well
BTEX Concentrations (ug/L) (a),(b)

Monitoring Well	Date Sampled	Lab (c)	Benzene	Toluene	Ethylbenzene	Xylenes
MW-128	27-Sep-91	NTL	ND(0.2)	ND(0.3)	ND(0.2)	ND(0.6)
(Screen	22-Oct-91	ANA	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
18'-23')	18-Nov-91	ANA	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
	11-Dec-91	ANA	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.5)
	31-Jan-92	ANA	ND(0.5)	ND(0.5)	ND(0.5)	ND(1)
	25-Feb-92	ANA	ND(0.5)	ND(0.5)	ND(0.5)	ND(1)
	18-Mar-92	ANA	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)
	14-Apr-92	ANA	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)
	05-May-92	ANA	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)
	16-Jun-92	ANA	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)
	16-Jul-92	ANA	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)
	31-Aug-92	ANA	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)
	21-Sep-92	ANA	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)
	26-Oct-92	ANA	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)
	09-Nov-92	ANA	1.5	1.8	ND(0.5)	1.6
	09-Dec-92	ANA	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)
	27-Jan-93	ANA	1.0	0.9	ND(0.5)	ND(1.0)
	12-Feb-93	ANA	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)
	02-Mar-93	GTEL	4	3	ND(0.5)	ND(1.0)
	04/20/93	GTEL	0.6	ND(0.3)	ND(0.3)	ND(0.5)
	05/24/93	GTEL	ND(0.5)	ND(0.5)	ND(0.5)	4
	22-Jun-93	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	22-Jun-93 *DUP*	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	27-Jul-93	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	20-Aug-93	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	09-Sep-93	GTEL	0.4	ND(0.3)	ND(0.3)	0.6
	15-Oct-93	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	08-Nov-93	GTEL	2	3	ND(0.5)	2
	20-Dec-93	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	17-Jan-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	04-Feb-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	24-Mar-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	28-Apr-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	25-May-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	28-Jun-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	29-Jul-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	24-Aug-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	19-Sep-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	06-Oct-94	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	04-Nov-94	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	13-Dec-94	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	04-Jan-95	GTEL	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.5)
	06-Feb-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	20-Mar-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	20-Apr-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	24-May-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	28-Jun-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	24-Jul-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	16-Aug-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	14-Sep-95	GTEL	ND(0.5)	ND(1.0)	ND(1.0)	ND(2.0)
	24-Oct-95	CAS	ND(0.5)	ND(1.0)	ND(1.0)	ND(1.0)
	28-Nov-95	CAS	ND(0.5)	ND(1.0)	ND(1.0)	ND(1.0)
	07-Dec-95	CAS	ND(0.5)	ND(1.0)	ND(1.0)	ND(1.0)



MAPCO ALASKA PETROLEUM, Inc.

Downgradient Monitoring Well Benzene Concentrations 1995 ($\mu g/L$)

MAPCO ALASKA PETROLEUM, Inc.
North Pole Refinery
1996 Groundwater Remediation Sampling Schedule

Sample Point	January	February	March	April	May	June	July	August	September	October	November	December
MW-101			X						X			
MW-101A			X						X			
MW-102			X						X			
MW-104			X						X			
MW-105			X						X			
MW-105A			X						X			
MW-106	X	X	X	X	X	X	X	X	X	X	X	X
MW-107			X						X			
MW-108			X						X			
MW-109			X						X			
MW-110			X						X			
MW-111			X						X			
MW-112			X						X			
MW-113			X						X			
MW-114			X						X			
MW-115			X						X			
MW-116			X						X			
MW-117			X			X			X			X
MW-118			X						X			
MW-119			X						X			
MW-121			X						X			
MW-123			X						X			
MW-124			X						X			
MW-125			X						X			
MW-126			X			X			X			X
MW-127			X			X			X			X
MW-128	X	X	X	X	X	X	X	X	X	X	X	X
Stripper A inf.	X	X	X	X	X	X	X	X	X	X	X	X
Stripper A eff.	X	X	X	X	X	X	X	X	X	X	X	X
Stripper B inf.	X	X	X	X	X	X	X	X	X	X	X	X
Stripper B eff.	X	X	X	X	X	X	X	X	X	X	X	X
Stripper C inf.	X	X	X	X	X	X	X	X	X	X	X	X
Stripper C eff.	X	X	X	X	X	X	X	X	X	X	X	X
Stripper D inf.	X	X	X	X	X	X	X	X	X	X	X	X
Stripper D eff.	X	X	X	X	X	X	X	X	X	X	X	X
Combined Eff.	X	X	X	X	X	X	X	X	X	X	X	X

Notes:
- All samples analyzed for benzene, toluene, ethylbenzene, and xylenes by EPA method 602.
- Only strippers being used will be sampled (only two are operating at a time).

CO-087

MAPCO ALASKA PETROLEUM INC.
1100 H & H LANE
NORTH POLE, ALASKA 99705
(907) 488-2741

Anna
Please send change in Project manager letter
Thanks
Kim

NRO File 100.38.090
Certified Return Receipt #P 521 078 606

July 11, 1997

Mr. Doug Bauer
State of Alaska
Department of Environmental Conservation
610 University Ave
Fairbanks, AK 99709-3643

RE: MAPCO ALASKA PETROLEUM Inc. North Pole Refinery Groundwater Remediation Status Report

Dear Mr. Bauer,

During the month of July, we recovered 226 gallons of product. Recovery was low due to rapidly rising groundwater levels.

Wastewater from the groundwater remediation system was discharged to the south gravel pit 31 days during the month of July. The daily flow was between .26 million gallons per day (MGD) and 0.39 MGD, average flow was 0.31 MGD.

We sampled the influent and effluent of the groundwater remediation air strippers on July 22. I haven't yet received the July results but the June results which weren't available for last month's report are attached.

We sampled monitoring wells MW-106, MW-128, and MW-129 on July 22. I haven't received the July results but those from June are attached.

If you have any questions or comments please call 488-5158.

Sincerely,

John Hellén
Environmental Engineer

MAPCO ALASKA PETROLEUM Inc.

cc: D.C. Rowse (MAPI)
Vanessa Blevins (ADEC) NRO File NPDES - DMR
Kim Ogle (EPA)

MRL-1

MAPCO ALASKA PETROLEUM, Inc.
Groundwater Remediation Air Stripper
Influent and Effluent BTEX Concentrations

Date Sampled: 24-Jun-97
Ambient Air Temperature (°C): 27
Recovery Wells: R-21, 34, 40
Inlet Groundwater Flow (gpm): 190
Laboratory: CAS

	Stripper C		Stripper D		Combined
Parameters	Influent	Effluent	Influent	Effluent	Effluent
pH	6.4	6.1	6.3	6.3	6.7
Conductivity (µS/cm at 25°C)	471	428	471	438	440
Temperature (°C)	7.2	10	7.0	10.7	11.1
Benzene (µg/L)	320	4	195	ND (1)	4
Toluene (µg/L)	370	5	206	ND (1)	4
Ethylbenzene (µg/L)	113	1	81	ND (1)	ND (1)
Xylene (µg/L)	526	13	431	ND (1)	8

Notes:
ND (1) - Analyte below method reporting limit of 1 ug/l.

MAPCO Alaska Petroleum, Inc.
Monitoring Well Monthly Sampling Summary

Date Sampled: 24-Jun-97
Laboratory: CAS

Well ID	Benzene	Toluene	Ethylbenzene	Xylenes
MW-106	ND (1)	ND (1)	ND (1)	ND (1)
MW-118	ND (1)	ND (1)	ND (1)	ND (1)
MW-126	ND (1)	ND (1)	ND (1)	ND (1)
MW-127	ND (1)	ND (1)	ND (1)	ND (1)
MW-128	ND (1)	ND (1)	ND (1)	ND (1)
MW-129	5	ND (1)	ND (1)	ND (1)

Notes:
- All results in ug/L
- ND (1) - Analyte below method reporting limit of 1 ug/l.